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Purpose or Objective: To evaluate the efficacy and safety of stereotactic radiation therapy (SRT) in the treatment of patients with recurrent pancreatic adnocarcinoma at the stump or abdominal lymph node after surgery.

Material and Methods: Between October 1 2011 and May1 2015, patients with recurrent pancreatic adnocarcinoma at the stump or abdominal lymph nodes after surgery were enrolled and treated with SRT at our hospital. The primary end-point was overall survival after SRT (OS). Secondary end-points were: local control rates (LC), time to symptom alleviation, and toxicity using the Common Terminology Criteria for Adverse Events (CTCAE v4.0).

Results: Twenty-four patients with 24 lesions (17 abdominal lymph nodes and 7 stumps) were treated with SRT. Among these patients, five patients were presented with abdominal lymph node and synchronous metastases in liver and lung. For the entire cohort, the median OS from diagnosis and SRT were 28.93 months and 12.20 months, respectively. The 6-month, 12-month, and 24-month actuarial LC rates were 95.2 %, 83.8% and 62.1% respectively. Symptom alleviation was observed in 11 of 14 patients reported symptoms (78.6%) with a median of 8 days (range, 1-14 days) after SRT. Nine patients (37.5%) experienced CTCAE v4.0 Grade 1 to 2 acute toxicities; one patient experienced grade 3 acute toxicity due to thrombocytopenia.

Conclusion: SRT is a safe and efficacious treatment modality for patients with recurrent pancreatic adnocarcinoma at the stump or abdominal lymph nodes after surgery. Further studies are needed before SRT can be recommended routinely.

EP-1258

Concurrent high-dose (60-70 Gy) radiation and chemotherapy for esophageal cancer: long-term results

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Purpose or Objective: Based on the results of the intergroup-0123/RTOG 94-05 trial that demonstrated no benefit of dose escalation over 50.4 Gy in definitive chemoradiotherapy (CRT) for esophageal carcinoma, 50.4 Gy appears to be accepted as a standard dose. Radiobiologically, however, higher radiation doses, if safely delivered, could lead to better local control. We have used combination of standard FP (5-fluorouracil [5-FU] and cisplatin) chemotherapy and radiation with dose≥60 Gy in the treatment of non-metastatic esophageal cancer. We report clinical outcome of the treatment protocol.

Material and Methods: Between 2002 and 2014, 86 patients with stage I-III or IV (M1 LYM) esophageal cancer were treated with CRT. Median age of the patients was 68 years (range: 46 to 84); 76 were men and 10 were women. Histology was squamous cell carcinoma in 98%. Patients were divided into 4 groups according to the stage and operability; Group 1: stage I patients (n = 10); Group 2: stage II-III operable patients (n = 20); Group 3: stage II-III (non-T4) inoperable patients (n = 21); and Group 4: stage III-IV (T4/M1 LYM) patients (n = 35). Chemotherapy protocols were either cisplatin (70 mg/m2) plus 5-FU (700 mg/m2 x 4 days) administered every 4 weeks or low-dose daily cisplatin (4 mg/m2) and 5-FU (200 mg/m2). Radiation was given by 10-MV X rays with a daily fraction of 1.8-2 Gy. Treatment volume included primary tumor plus regional lymph nodes. A total dose between 60 and 70 Gy was chosen depending on the treatment volume. Median radiation dose was 64 Gy (range: 50-70 Gy; 5 patients could not complete planned treatment). Failure was confirmed by pathology or findings of progressive disease on serial endoscopy and/or imaging studies. Overall survival (OS) and locoregional control (LC) rates were calculated by the Kaplan-Meier method. Toxicities were evaluated by the Common Terminology Criteria for Adverse Events version 4.0.

Results: For all 86 patients, the 3-year LC and OS rates were 65% and 29%, respectively; they were 100% and 100%, respectively, in Group 1, and 72% and 42%, respectively, in Group 2. The 2-year LC and OS were 53% and 14%, respectively, in Group 3, and 69% and 25%, respectively, in Group 4. Overall response rate was 78% (complete response in 31 and partial response in 36). Grade 3 or higher acute toxicities, mainly hematological, were observed in 37% of the patients and 10% experienced grade 3 or higher late toxicities.

Conclusion: CRT with FP and 60-70 Gy of radiation appears to be tolerable for patients with esophageal cancer. Although outcome of this treatment in inoperable patients is not satisfactory, the 3-year LC of 100% for stage I patients and 76% for stage II-III operable patients appear promising. Further investigation is warranted to clarify the optimal radiation dose in CRT for esophageal cancer.

EP-1259

Clinical significance of lymphocyte count before chemoradiotherapy in resected pancreatic cancer

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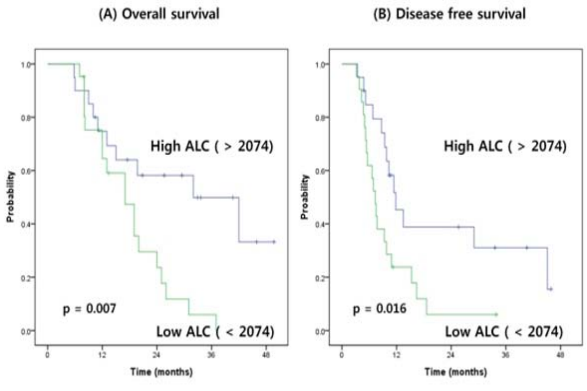
Purpose or Objective: The objective of this study was to investigate the prognostic value of circulating lymphocyte level at the beginning of postoperative chemoradiotherapy (CRT) in pancreatic adenocarcinoma.

Material and Methods: From 2007 to 2014, 41 patients treated with postoperative CRT were analyzed. The median dose of radiotherapy was 50.4 Gy (range, 45 – 59.4) and chemotherapy was administered after surgery. Absolute lymphocyte counts (ALC) was obtained from complete blood count tests performed prior to CRT. We analyzed blood lymphocyte count as well as clinical parameters to identify prognostic factor

Results: With a median follow-up of 16.9 months, 32 patients had cancer recurrence and 28 died from the disease. The median overall survival (OS) and disease free survival (DFS) were 19.7 months and 9.8 months. The median OS of high postoperative ALC (>2.074 $\times 10^3$/ μL) group was significantly longer than that of the lower ALC group (32.0 months versus 17.0 months, p = 0.007). In multivariate analysis, high postoperative ALC was a good prognostic factor for OS. (Hazard Ratio = 0.341, CI, 0.149 – 0.778, p = 0.011). High ALC at the beginning of postoperative CRT was also a prognostic factor for DFS in multivariate analysis (Hazard Ratio = 0.452, CI, 0.215 – 0.946, p = 0.035).



Conclusion: Postoperative ALC is a significant prognostic factor for resected pancreatic cancer patients. Postoperative immune status might help to predict survival outcome and to stratify group that is effective in CRT for resected pancreatic cancer.

EP-1260

Prognostic factors in hepatoma patients treated with radiotherapy for lymph node metastasis

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Purpose or Objective: To investigate prognostic factors for overall survival (OS) in hepatocellular carcinoma (HCC) patients treated with external beam radiotherapy (RT) for lymph node (LN) metastasis.

Material and Methods: Between 2004 and 2015, 105 HCC patients underwent palliative RT for LN metastasis. The median age was 60 years (range, 30–82). Biologically effective radiation doses of 39–75 Gy10 (median, 59.0 Gy10) were delivered. The median follow-up period was 5.7 months.

Results: The median OS was 5.8 months. On univariate analysis, young age, symptoms related to LN metastasis, poor performance status, Child-Pugh class B–C, uncontrolled intrahepatic disease, non-nodal distant metastasis (DM), multi-station LN metastasis, biologically effective dose <60 Gy10, lack of local response to RT, and stable or increased post-RT alpha-fetoprotein levels compared to pre-RT levels were significant prognostic factors predicting poor OS (all $p<0.05$). On multivariate analysis among pre-RT factors, symptoms related to metastatic LNs (HR, 2.93), Child-Pugh class B–C (HR, 2.77), uncontrolled intrahepatic disease (HR, 2.74), and non-nodal DM (HR, 1.62) were significant prognostic factors for poor OS (all $p<0.05$). Risk stratification in 4 groups by the number of risk factors had a significant predictive value for OS, with patients having 0, 1, 2, and 3–4 risk factors demonstrating median OS intervals of 18.0, 11.7, 5.7, and 3.0 months, respectively ($p<0.001$).

Conclusion: Our risk stratification model can be used effectively in assessing the life expectancy of the HCC patient before initiating palliative RT for LN metastasis. Moreover, the presence of symptoms related to LN metastasis was shown to be the most powerful indicator of poor OS.

EP-1261

Impact of sarcopenia on adverse effects in trimodality therapy for esophageal carcinoma

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Purpose or Objective: Sarcopenia is a major hallmark of cancer cachexia and associated with increased treatment toxicity and worse overall survival in cancer patients. The aim of the study is to investigate the incidence and course of sarcopenia in patients undergoing curative trimodality therapy for locally advanced esophageal cancer and to correlate skeletal muscle mass with treatment complications during neoadjuvant treatment and surgery.

Material and Methods: A subset of 31 patients treated in a prospective trial for locally advanced esophageal cancer with induction chemotherapy, neoadjuvant chemoradiation and surgical resection were identified at two institutions and clinical data was analyzed for treatment-related adverse events and consequent additional hospitalizations. Skeletal muscle mass was obtained by a second analysis of staging CTs before, during and after curative trimodality therapy and analyzed based on previously established threshold values for sarcopenia.

Results: Fourteen patients (45%) were characterized as sarcopenic at the initial staging. Unplanned hospitalizations occurred significantly more frequently in sarcopenic patients (71% vs. 29%, $p = 0.03$) with a significantly longer total duration of hospital stay including postoperative stay (median 33.5 vs. 21.3 days, $p < 0.05$). During neoadjuvant therapy with a median duration of 3.5 months, patients showed a statistically significant reduction of of skeletal muscle mass of 10.1% ($p < 0.01$) resulting in an increase in the prevalence of sarcopenia from 45% to 74%.

Conclusion: CT-based assessment of sarcopenia demonstrates a significant decline of muscle mass during curative trimodality therapy for locally advanced esophageal cancer and can predict toxicity-related unplanned hospitalization. Based on these findings, CT-based measurement of muscle mass may serve as objective parameter to identify frail patients in need of intensified supportive therapy.

EP-1262

Survival and symptom relief after salvage radio(chemo)therapy for recurrent esophageal cancer

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Purpose or Objective: Loco-regional recurrence of esophageal cancer (REC) after initial treatment remains a dominant cause of death. Treatment options for REC are limited. This study was realized to assess the survival and symptom relief after salvage radio(chemo)therapy for recurrent esophageal cancer.

Material and Methods: Data from 259 patients from 3 centers were retrospectively reviewed to screen for eligible patients. 194 patients were excluded because of following criteria: 1) no pathologically confirmed squamous cell carcinoma or adenocarcinoma; 2) distant metastasis; 3) no dose-volume histogram (DVH) data available; 4) salvage resection after REC; 5) Brachytherapy in the initial or current treatment. Between January 1998 to December 2014 sixty-five patients with REC after curative intended treatment (primary RCT or surgical resection with or without neoadjuvant radiochemotherapy) met our inclusion criteria retrospectively. The recurrence was diagnosed by computed tomography (CT) and/or upper gastrointestinal endoscopy. The initial treatment was as follows: surgical resection in 47 patients (72%), neoadjuvant RCT (median 50,4Gy, range 45-50,4Gy) plus surgery in 12 (19%) patients or definitive RCT (median 60Gy, range 50,4-64 Gy) in 6 patients (9%). The median time to recurrence from initial treatment was 16 months (range 3-101 months).

Results: Median follow-up time for surviving patients was 27 months (5-150 months). The 1-year and 2-year survival rates were 58 ± 6% and 27 ± 6%, respectively. Subjective symptom relief was achieved in 25 of 34 symptomatic patients (74%). The most common toxicities were leukopenia, nausea, vomiting and gastritis. RT Doses ^{3} 50Gy and ECOG-PS (1-2 vs. 3) associated with better median survival time (MST) and prognosis, respectively ($p=0.003$;$p=0.001$).

Conclusion: Salvage radio(chemo)therapy for recurrent esophageal cancer is a reliable option in patients suffering from REC. In particular therapy of symptoms caused by the tumor can be managed by salvage-RCT. The toxicity is in an acceptable range. Long-term survival is possible in some patients.